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Records of killer whales (*Orcinus orca*) in Thai waters

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ABSTRACT

Killer whales (*Orcinus orca*) are found in all oceans and seas, in both hemispheres. Recent genetic, morphological, coloration and ecological evidences suggested that there are several geographic forms of killer whale i.e. Type A resident, Type A transient, Type B, Type C, and Type D. This paper provides killer whale records in Thailand since 1993 to 2008. There were 11 records of killer whale sightings in Thai waters; 10 records were from the Andaman Sea and 1 record was from the Gulf of Thailand. All sightings were from coastal areas of 3 provinces; Phang-nga, Phuket and Surat Thani and most of them were concessionary recorded by tourists. The sighted pods were around 2-30 individuals. Among all records, the photographs were available for type identification from 2 records in 2006-2007. The closed saddle patch that extends forward and the more pointed dorsal fin tip indicated that they were Type A transient killer whale. Additionally, killer whales in the Andaman Sea were reported to prey upon mantas.

KEYWORDS: Killer whale, *Orcinus orca*, Andaman Sea, Gulf of Thailand

INTRODUCTION

Killer whale, *Orcinus orca*, is among the most distinctive, and easily identified, of all cetaceans. The body is robust. The tall, erect dorsal fin is nearly as distinctive as the color pattern. The dorsal fin may reach 0.9 m high in female and 1.8 m high in male. The dorsal fins of female and young whale are falcate and are generally pointed or slightly rounded at the tip. Adult males tend to have triangular dorsal fins. (Pitman and Ensor, 2003; Ford, 2002; Jefferson et al., 1993, 2008). Recently genetic, morphological, coloration, and ecological evidence suggested that there may be many different geographical forms of killer whale. Currently, at least 4 separate forms of killer whale are known; Type A (transient and resident), Type B, Type C, and Type D. Killer whale will be likely split into a number of different species or at least subspecies over the next few years. Type A killer whales are found in all oceans and seas, in both hemispheres. They appear to be more common in nearshore, cool temperature to sub polar waters. Type B killer whales are found mainly in the Antarctic and surrounding waters (Falklands and New Zealand), often among the pack ice. Type C is also an Antarctic form, but seem to prefer waters of East Antarctica, occurring mainly in the pack ice (Jefferson et al., 2008; Pitman and Ensor, 2003; Ford, 2002). Type D was seen in sub-Antarctic waters of the Southern hemisphere (Jefferson et al., 2008).

Killer whales are undoubtedly the most cosmopolitan of all cetaceans. They can be seen in any marine region, from the equator to ice edge. Although they are generally more common in near shore areas and at higher latitudes, there appear to

be no hard and fast restrictions of water temperate or depth on their range. Arctic Ocean, western Indian Ocean, Andaman Sea, Pacific Ocean and southern part of Atlantic Ocean is a secondary range of distribution of killer whales. Except for the mentioned areas, this is the primary range of distribution. Although they do not appear to migrate, movements can be extensive; for instance, some killer whales have been documented to have moved between Alaska and central California (Jefferson et al., 2008; Shirihai and Jarrett, 2006; Ford, 2002)

Killer whales are known to attack marine mammals of all groups, they often eat various species of fish including sharks and rays and cephalopod. They occasionally eat sea birds and marine turtles. Type A killer whales specialized on Minke whales, Type B ate mostly on seals, and Type C was a fish-eater. Type A killer whales were have been distinguished as 4 types, referred to as residents, transients, and off shores. Although distinguished by ecological differences, there were also differences in coloration and external morphology. In Washington and British Columbia, at least, residents and off shores were primarily fish eaters and transients ate mostly marine mammals (Jefferson et al., 2008; Shirihai and Jarrett, 2006; Ford, 2002).

MATERIALS AND METHODS

All information was obtained from the tourists, divers, websites (www.talaythai.com and www.scubazoom.com) newspapers and Chantrapornsy et al (1993). The data were recorded from 1993 to December 2008.

RESULTS AND DISCUSSION

Number, sighting place and time

Since 1993 to 2008 in total 11 records of sighting of killer whales were reported, 10 records in the Andaman Sea and 1 record in the Gulf of Thailand. About 75 individuals were sighted from 1993 to 2008. Killer whales were seen only in 3 provinces; 7 records in Phang-nga and 3 records in Phuket in the Andaman Sea, and only 1 record in Surat Thani in the Gulf of Thailand (Table 1, Fig.1). Most of the sightings were concessionary reported by tourists and divers.

Among 11 records, photographs were available for only three records found in 2006 and 2007. The closed saddle patch that extends forward and the more pointed dorsal fin tip indicated they would be Type A transient killer whale (Fig. 2 and 3). Calves were seen in the pods in 2000 and 2006. Most sightings were reported in the dry season (November to April) particularly during January to April. Only 2 records were reported in the rainy season (May to October). Perhaps killer whales might migrate into Thai waters during the rainy

season as well. Since the weather is bad and sea condition was very rough so it was not safe for the tourists to go out for diving. Thus the chance to see the whale in the rainy season is lower than in the dry season in proportion to the number of boats and tourists.

In general killer whales were seen in the remote islands except Maithon Island. Maithon Island is located in the outer edge of Phang-nga Bay, 8.5 km far from Phuket Island and about 60 km from mainland coast; nevertheless the island faces to open sea that may be an advantage for large whale to forage into the area (Table 1, Fig. 1-3). In this study killer whales were commonly found at the open sea about 40-70 km off the mainland coast.

Ford (2006) reported that killer whales were usually traveling alone or in groups of up to about 50 individuals. In Thailand small pods of killer whales, 2-4 animals were generally seen, however the large pods of about 30 and 10 whales were reported in 1993 and 2000, respectively.

Table 1 Sighting records of killer whale in Thai waters from 1993 to December 2008.

[D = distance from mainland coast, WD = water depth at the radius of 5 km from shoreline of the sighting area (information of water depth from the Map of Hydrographic Department, Royal Thai Navy), - = no information, ¹Chantrapornsy et al (1999), ² = Khao Sod newspaper on 27 Mar 2007]

Date	Location	D (km)	WD (m)	Ind.	Behavior, (Observer/reference)
25 Mar 1993	Similan Is., Phang-nga	65	70	~ 30	Swam followed the tourist boat (¹ Tourists; Ranawan Booprakob)
19 Sep 1994	Maithon Is., Phuket	60	32-38	4	Attacked the mantas (¹ Tourists)
Beginning of 1995	Toa Is., Surat Thani	70	40	2	-(¹ Tourists)
18 Apr 1997	Racha Is., Phuket	68	57-68	6	-(Tourists)
Nov to Dec 2000	Richelieu Rock, Phang-nga	40	45	~10 with a small calf	They separated into small pods. (Nut Sumontemi)
9 Oct 2002	South of Surin Is, Phang-nga	58	70	6	-(Tourists)
1 Jan 2006	Surin Is., Phang-nga	58	70	3 (male, female & calf)	Swam close to the boat about 1 hr. (Thanakorn Saengdaw, www.scubazoom.com)
28 Jan 2006	Between Richelieu Rock and Tachai Is., Phang-nga	40	60	2	Swam near the tourist boat & attack mantas (Tourists, www.scubazoom.com)
19 Mar 2007	Surin Is., Phang-nga	58	70	3-4	Swam near the tourist boat, ate fishes (Tourists, www.talaythai.com)
Mar 2007	Racha Is., Phuket	68	57-68	3-4	² Newspaper & tourists
Dec 2008	Richelieu Rock, Phang-nga	55	40-45	4	Edwin Wiek

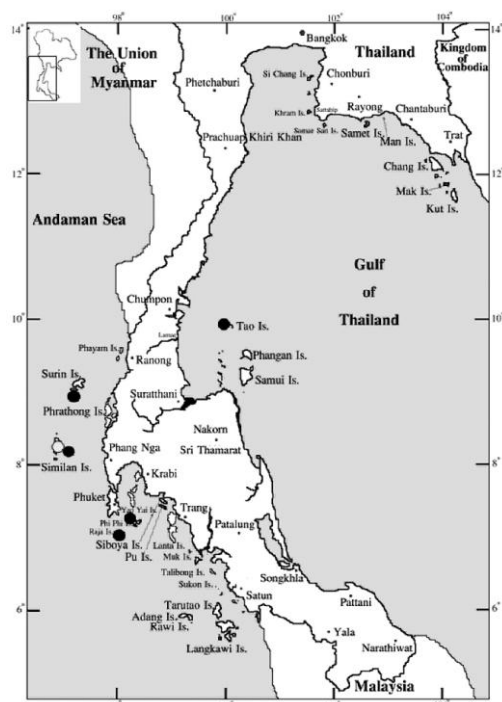


Fig. 1 Map of Thai coasts, Andaman Sea and the Gulf of Thailand showing the locations of sighting of killer whales from 1993 to December 2008. Dark circle indicates sighting area. Light circle indicates the stranding record.

Food and Behavior

In the Andaman Sea, killer whales were known to feed on mantas. Killer whales attacked the mantas at Maithon Island, Phuket Province in 1994 (Chantrapornsyl, et al., 1993). Recently in 2006, tourists reported that killer whales had attacked mantas at Richelieu Rock, Phang-nga Province. In addition, they also observed the dead mantas floating close to the place where killer whales had been seen.

Killer whales tended to have their own specific food in each population. In the Pacific Northwest residents, killer whales were known to feed specifically on salmon. Transients in Puget Sound appeared to focus their foraging on harbor seals and killer whales in the Norwegian fjords specialized on herring. Some killer whales in New Zealand may forage mostly on sharks and other elasmobranchs. In the Antarctic, Type A killer whale specialize on Minke whale, Type B eats mostly seals, and Type C is a fish-eater (Jefferson et al., 2008; Shrihai and Jarrett, 2006). In Thailand, particularly in the Andaman Sea killer whales were found to attack the mantas (at least 2 cases, at Maithon Island, Phuket Province and at Similan Island, Phang-nga Province). At Surin Island, Phang-nga Province killer whales have been seen following school of fishes and eating on fishes. Considering the size, number of whales in the pod and time, probably

the pod of killer whales seen at Surin Island, Phang-nga Province on 19 March 2007 and the pod seen at Racha Island, Phuket Province in March 2007 was the same pod.

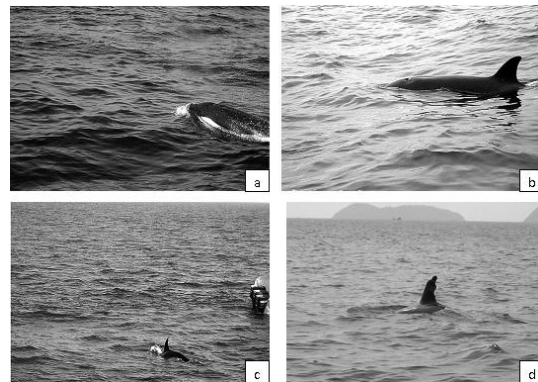


Fig. 2 Possibly Type A transient killer whales sighted on 1 January 2006 at Surin Island, Phang-nga Province. (a) the eye patch was a medium-sized oval oriented parallel to the body axis and no obvious dorsal cape, (b) a closed saddle patch extended forward, (c) pointed dorsal fin tip, and (d) an abnormal dorsal fin of the male (Photographs: Thanakorn Saengdaw)



Fig. 3 Possibly Type A transient killer whales sighted on 19 March 2007 at Surin Island, Phang-nga Province (a) the clear large oval patch at the eye, (b) characteristics of the dorsal fins, one more pointed dorsal fin tip and another round, (c) three were seen in a group, and (d) one whale had no distinct dorsal cap and another showed the white ventral side (www.talaythai.com)

Jefferson et al (2008) stated that Type A killer whales may show great interest in vessels; at other times they may avoid them. Killer whales often breach spyhop, flipper-slap and fluke-slap; they often perform these behaviors in bouts. In this study killer whales were seen swimming following the boats in Phang-nga Province in 1993 and 2000 (Ranawan Booprakob and Nut Sumontemi, personal communication, Table 1). In 2006 and 2007, killer whales swam close to the tourist boats for an hour (Thanakorn Saengdaw, personal communication;

Table 1). Furthermore, the whales were reported to forage in the same place and nearby area for several days in 2006 and 2007.

Stranding record

A carcass of a killer whale was found at Similan Island, Phang-nga Province and the skeleton of this whale was exhibited at the Marine National Park Office on the island in 1994. But unfortunately the skeleton was lost in the Andaman Tsunami on 26 December 2004 (Suwan Pitaksinthorn personal communication, Fig. 1).

Although killer whales are the most cosmopolitan of all cetaceans, they can be seen in any marine region, from the equator to ice edge (Jefferson et al., 2008; Shirihai and Jarrett, 2006; Ford, 2002). However, there was no report of sighting of killer whales in Southeast Asia region, except in Indonesian archipelago (Hoyt, 2005). There was no attempt to have specific research on killer whale in this region as well. Regarding the global distribution of killer whales, the seas around Andaman Sea are the secondary range (Jefferson et al., 2008). We considered that the killer whales were not the resident in Thai waters since they were not seen regularly throughout the year. It seemed that the whales have migrated following their prey to Thai waters and sometime they foraged in the same place for many days. The killer whales sighted in 2006 and 2007 would be Type A transient, however to clarify what type of killer whales migrated into Thai waters, it is necessary to collect information in the long term including photographs and behavior, and tissue for genetic study. Cooperation among countries particularly in Southeast Asian countries would be helpful for the study of killer whale in this part of the world.

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